

# Environmental Commission Agenda Report

---

**MEETING DATE:** 14 November 2019  
**TO:** Environmental Commission  
**FROM:** Commission Vice-Chair James Wang  
**SUBJECT:** Recommendation to City Council to Approve an Ordinance  
Prohibiting Installation of Natural Gas in New Buildings

---

## **RECOMMENDATION:**

Request the City Council to draft and approve an ordinance prohibiting installation of natural gas infrastructure in new buildings.

## **ABSTRACT:**

The primary component of natural gas is methane (CH<sub>4</sub>), a greenhouse gas much more potent than carbon dioxide (CO<sub>2</sub>)<sup>1</sup>. This report recommends an ordinance to prohibit installation of natural-gas facilities in new buildings, thus curtailing additional use of fossil fuels. Many environmental, legal, health, public safety, and financial reasons justify this recommendation.

Key points:

1. The inventory in the January 2018 Encinitas Climate Action Plan<sup>2</sup> lists Natural Gas as the third largest contributor to the City's Greenhouse Gas (GHG) inventory (CAP page ES-1 and page 2-4, Figure 2-1)<sup>3</sup>.
2. The inventory considers only emissions from the burning of natural gas and omits impacts from its production or distribution, in particular, leakage. Due to its potency, leakage of natural gas is far worse than the CO<sub>2</sub> that results when it is consumed<sup>4</sup>.
3. Natural gas is purported to be a "clean" fuel, but that assumption is questionable if the

- 
- 1 CH<sub>4</sub> has a shorter atmospheric lifetime than CO<sub>2</sub>, so comparison of its Global Warming Potential (GWP) is duration-dependent. Over 20 years the GWP of CH<sub>4</sub> is about 85x that of CO<sub>2</sub>, while over 100 years it's about 25x. <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>
  - 2 [http://www.encinitasca.gov/Portals/0/City Documents/Documents/City Manager/Climate Action/Encinitas\\_Climate Action Plan\\_Final\\_01-17-18.pdf](http://www.encinitasca.gov/Portals/0/City Documents/Documents/City Manager/Climate Action/Encinitas_Climate Action Plan_Final_01-17-18.pdf)
  - 3 Transportation is first at 54%, electricity is second at 23%, and natural gas is third at 13%. Community Choice Energy will decrease electricity's share considerably.
  - 4 Gas leakages are not part of the inventory and curtailing them does not direct help the City achieve its targets. However, our sincere goal is not the numerical targets but actual reduction.

entire lifecycle of natural gas is included. The Environmental Defense Fund (EDF) estimates that 2 to 2.5% of the gas used in the US is lost to leakage<sup>5</sup>. While 2% sounds small, it's actually an egregious amount due to the potency of CH<sub>4</sub> (see Footnote 1).

4. AB3232<sup>6</sup> (2018) and Executive Order EO B-30-15<sup>7</sup> require the California Energy Commission (CEC) to reduce building sector emissions to 40% below 1990 levels by 2030. From the bill text: *"Decarbonizing California's buildings is essential to achieve the state's greenhouse gas emission reduction goals at the lowest possible cost."*
5. EO B-55-18<sup>8</sup> declares that California's economy will be carbon neutral by 2045.
6. EO B-30-15, EO B-55-18, AB3232 and SB100 are commitments to wean California of fossil fuels. The increasing cost of maintaining the aging gas infrastructure<sup>9</sup> will be shared among a decreasing number of gas users, raising per-customer costs.
7. Gas-free homes will be all-electric homes. As of 2020, the CEC requires that new homes be built with solar panels that will supply at least 50% of its electricity<sup>10</sup>.
8. Homes that cook with natural gas once or more per week have pollutant levels that would be illegal outdoors<sup>11</sup>. People in these homes are subjected to levels of nitrogen dioxide and formaldehyde that exceed outdoor federal air quality standards.
9. Natural gas distribution and storage are hazards: consider the 2010 San Bruno explosion and the 2015 Aliso Canyon leak. Besides the public safety danger, these disasters wrought havoc on California's efforts to mitigate climate change<sup>12</sup>.
10. In July 2019, Berkeley became the first California city to pass an ordinance (effective 1 January 2020) prohibiting natural gas infrastructure in new buildings<sup>13</sup>. At least 20 other California cities are considering such a ban<sup>14,15</sup>. The text of Berkeley's ordinance is attached, or may be found online at this footnote<sup>16</sup>.

---

5 <https://www.economist.com/business/2016/07/23/a-dirty-little-secret>

6 Please see [https://leginfo.legislature.ca.gov/faces/billCompareClient.xhtml?bill\\_id=201720180AB3232](https://leginfo.legislature.ca.gov/faces/billCompareClient.xhtml?bill_id=201720180AB3232) for the text of AB-3232 "Zero-emissions buildings and sources of heat energy".

7 <https://www.ca.gov/archive/gov39/2015/04/29/news18938/>

8 <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>

9 Long-overdue and postponed investments in gas infrastructure have resulted in pipeline and storage tragedies. While it may be too little, too late, SoCalGas has requested a 30% increase in gas revenues, while PG&E has requested a 15% increase. These increases are forecast to continue to at least 2030. <https://www.nrdc.org/experts/pierre-delforge/study-ca-needs-safe-managed-transition-away-gas>

10 <https://www.utilitydive.com/news/california-to-require-rooftop-solar-for-most-new-homes/523200/>

11 <https://newscenter.lbl.gov/2013/07/23/kitchens-can-produce-hazardous-levels-of-indoor-pollutants/>

12 [https://ww3.arb.ca.gov/research/aliso\\_canyon/arb\\_aliso\\_canyon\\_methane\\_leak\\_climate\\_impacts\\_mitigation\\_program.pdf](https://ww3.arb.ca.gov/research/aliso_canyon/arb_aliso_canyon_methane_leak_climate_impacts_mitigation_program.pdf)

13 [https://www.cityofberkeley.info/Clerk/City\\_Council/2019/07\\_Jul/Documents/2019-07-09\\_Item\\_21\\_Adopt\\_an\\_Ordinance\\_adding\\_a\\_new.aspx](https://www.cityofberkeley.info/Clerk/City_Council/2019/07_Jul/Documents/2019-07-09_Item_21_Adopt_an_Ordinance_adding_a_new.aspx)

14 Other California cities that are considering or that have passed bans on natural gas include Oakland, Mountain View, San Francisco, San Jose, San Mateo, Santa Monica, and Carlsbad. See <https://grist.org/article/berkeley-triggered-a-chain-of-anti-gas-laws/>

15 See this Op-Ed in the 31 July 2019 Los Angeles Times: <https://www.latimes.com/opinion/story/2019-07-30/berkeley-natural-gas-ban>

16 [https://www.cityofberkeley.info/Clerk/City\\_Council/2019/07\\_Jul/Documents/2019-07-23\\_Item\\_C\\_Prohibiting\\_Natural\\_Gas\\_Infrastructure\\_pdf.aspx](https://www.cityofberkeley.info/Clerk/City_Council/2019/07_Jul/Documents/2019-07-23_Item_C_Prohibiting_Natural_Gas_Infrastructure_pdf.aspx)

**Summary:** Elimination of the installation and use of natural gas will lower the City's GHG emissions, improve health and public safety, and reduce costs for residents and developers.

### **STRATEGIC PLAN FOCUS AREA AND COMMISSION WORK PLAN:**

1. This proposal aligns with the **City of Encinitas Administrative Manual, Environmental Policy, Council Policy Number C025<sup>17</sup>** in many areas:
  - a) Builds, Plans, and Plants Wisely – *i) Ensure green building practices in all public and private development (including new construction and renovation/tenant improvements), and ensure that city building codes, zoning ordinances, and other land use regulations reflect the goals of this Policy. ii) Work with local builders, realtors, and homeowners to develop initiatives that require best-practice standards to reduce overall environmental impact of new development, re-development, and renovation.*
  - b) Cleans the Air – *i) Be proactive in protecting public health and ecological quality by lowering the amount and number of sources of air and noise pollution. ii) Educate those who manage commercial and public buildings on methods for improving indoor air quality and educate citizens on the harms associated with poor indoor air quality.*
  - c) Uses Energy Wisely – *i) Reduce carbon emissions to 1990 levels by year 2020, per California Assembly Bill 32. ii) Invest in and promote ultra-efficient building and transportation technologies and expand use of renewable energy for city facilities. iii) Develop and promote creative, economics-based programs to encourage reduced energy use and carbon emissions from city residents and businesses. iv) Work toward an economy that relies solely on practical, renewable energy sources.*
  - d) Roles and Responsibilities of the Environmental Advisory Committee<sup>18</sup> – *Identify specific steps that citizens and businesses can take to help Encinitas be a good environmental steward, and work with and support city departments to integrate these policy principles into the City's daily management and decisions.*
  - e) Citizens and Community – *i) Take responsibility for the social, environmental, and economic impacts of daily decisions and actions. ii) Engage in the City's environmental planning processes and bring forth ideas to ensure the Environmental Policy and Work Plan meet the community's needs. iii) Hold local, state, and national leaders accountable on environmental issues.*
2. The City's **2018 Climate Action Plan<sup>19</sup> (CAP)** does not explicitly name natural-gas reduction as a strategy, but it partially implements it via its BE-2 and BE-4 Strategies<sup>20</sup>. Even if not a specific strategy, the main goal of any CAP is reduction of GHG emissions.
3. This report's recommendation is consistent with the **Environmental Commission 2019-2020 Work Plan<sup>21</sup>** Goal 5 - CAP Implementation and Goal 10 - Environmental Nexus to

17 See page 4 of [http://encinitas.granicus.com/MetaViewer.php?view\\_id=2&clip\\_id=1154&meta\\_id=49036](http://encinitas.granicus.com/MetaViewer.php?view_id=2&clip_id=1154&meta_id=49036)

18 The **Environmental Advisory Committee** is now the **Environmental Commission**.

19 [https://encinitasca.gov/Portals/0/City%20Documents/Documents/City%20Manager/Climate%20Action/Encinitas\\_Climate%20Action%20Plan\\_Final\\_01-17-18.pdf](https://encinitasca.gov/Portals/0/City%20Documents/Documents/City%20Manager/Climate%20Action/Encinitas_Climate%20Action%20Plan_Final_01-17-18.pdf)

20 CAP Strategies BE-2 and BE-4 (CAP page 3-4) require the installation of solar water heaters in new residential and commercial buildings.

21 [http://encinitas.granicus.com/MetaViewer.php?view\\_id=7&clip\\_id=2014&meta\\_id=103785](http://encinitas.granicus.com/MetaViewer.php?view_id=7&clip_id=2014&meta_id=103785)

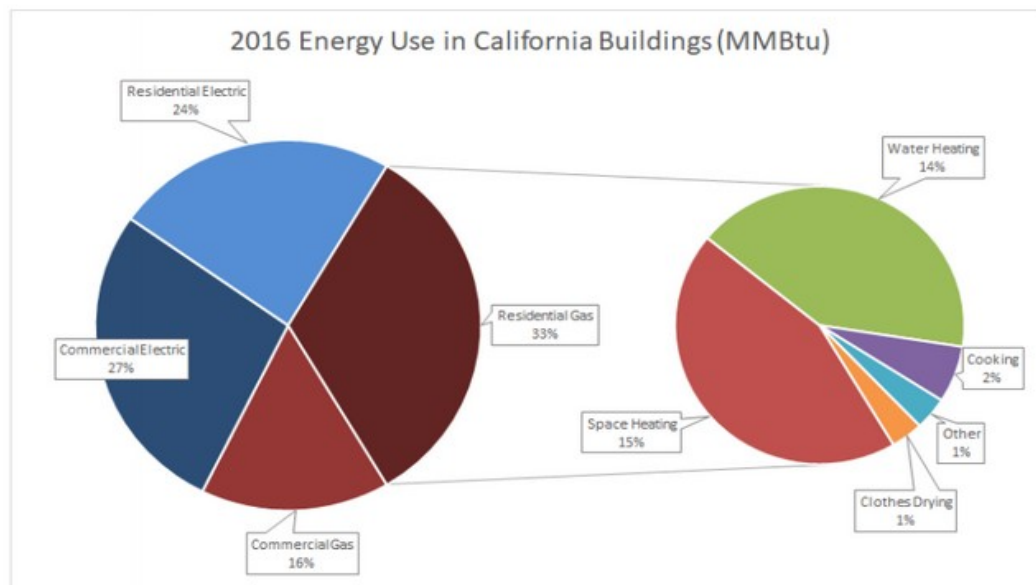
Planning Documents. It is also consistent with Council Strategic Plan Objectives Protects and Preserves Natural Resources, and Implement Climate Action Plan.

## **BACKGROUND:**

About 70 million American buildings use natural gas for their space heating, water heating, and cooking. About half of their energy usage comes from natural gas (Figure 1).

Supporting this usage requires an extensive network of pipelines and storage facilities. Maintaining this network so that it is safe can be challenging.

Natural gas consumption results in about 560 MMTCO<sub>2</sub>e annual emissions<sup>22</sup>, comprising about 10% of US carbon emissions.



Source: California Energy Commission

Figure 1: Natural gas comprises about half of the energy usage in buildings.

## **ANALYSIS:**

For decades, natural gas has been regarded as a *de rigueur* source for energy in buildings.

But recent developments in climate science, renewable energy, and legislative fronts, combined with disappointing incidents of gas infrastructure mismanagement and oversight, have altered the balance. For example, there once was no concern about climate change; now we know that it is an irreversible and existential threat to life as we know it.

This section discusses necessary considerations when evaluating whether continued installation of natural gas infrastructure makes rational sense.

22 Page 6, "The Economics of Electrifying Buildings" Rocky Mountain Institute, June 2018.  
[https://rmi.org/wp-content/uploads/2018/06/RMI\\_Economics\\_of\\_Electrifying\\_Buildings\\_2018.pdf](https://rmi.org/wp-content/uploads/2018/06/RMI_Economics_of_Electrifying_Buildings_2018.pdf)

## Environmental

Natural gas is often considered a fossil fuel that is “clean” compared to other fossil fuels. However, that comparison considers only a small part of the entire lifecycle: combustion. The production and delivery portions must be included too.

Inevitably, leakages occur, and when they are taken into account the marginal advantages of natural gas disappear. For example, leakages must be below 1.6% for natural gas vehicles to have an advantage over gasoline vehicles<sup>23</sup>. While that study concerned transportation, it shows that even small lifecycle leaks dispel purported advantages.

The Environmental Defense Fund (EDF) estimates that 25% of anthropogenic global warming is due to methane emissions. EDF’s Chief Scientist, Steve Hamburg, says, “*By emitting just a bit of methane, mankind is greatly accelerating the rate of climatic change*”<sup>24</sup>.

Extraction of natural gas impacts land use and wildlife. To prepare a well site, operators build a well pad and miles of pipelines and access roads, often in pristine areas. No matter how careful an operator may be, the construction harms acres of land and causes erosion of dirt, vegetation and landscape. Habitat fragmentation and disruption of wildlife migration routes are inevitable.

Hydraulic fracturing (“fracking”) is now common. Fracking involves not only the disruptions mentioned above, but adds the injection of toxic chemicals underground at high pressure and high temperature. These chemicals contaminate public water supplies.

The EPA has identified over 1000 chemical additives that are used for fracking, including acids, bactericides, scale removers, and friction-reducing agents<sup>25</sup>. Each well may use tens of thousands of gallons of these additives. The additives are mixed with large quantities of local water, often taken from water-stressed areas. Over 140 billion gallons of local water was used at 35000 fracking sites, an average of 4 million gallons per site<sup>26</sup>.

With the City’s move to Community Choice Energy, 100% clean energy will be a viable. No matter what, SB100 mandates 100% clean energy by 2045. Natural gas will never be renewable or carbon-free.

## Legislation

Pertinent legislation that impacts fossil-fuel use include:

- **Executive Order S-3-05** directs California to reduce GHG emissions to 1990 levels by 2020, and to 80% below 1990 levels by 2050.
- **AB32 Global Warming Solutions Act** establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions, and puts a cap on GHG emissions of 1990 levels by 2020.
- **Executive Order B-30-15** establishes a GHG emissions reduction target of 40% below 1990 levels by 2030. EO B-30-15 was later codified by **AB3232** into a formal statute.
- **Executive Order B-55-18** mandates a carbon-neutral California economy by 2045.

---

23 <https://www.ucsusa.org/resources/environmental-impacts-natural-gas>

24 <https://www.edf.org/climate/methane-other-important-greenhouse-gas>

25 See Appendix A in this “Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources” <https://www.epa.gov/sites/production/files/documents/hf-report20121214.pdf>

26 See “Study of the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources” <https://www.epa.gov/sites/production/files/documents/hf-report20121214.pdf>



- **AB3232 Zero-Emissions Buildings Act** requires the CEC to create a plan by 2021 to reduce building sector emissions to 40% below 1990 levels by 2030.
- **SB100<sup>27</sup> California 100% Clean Energy Act** accelerates California's Renewable Portfolio Standard (RPS) goals for electricity to 50% clean energy by 2025, 60% by 2030, and 100% clean, carbon-free renewable energy by 2045<sup>28</sup>.

All of these acts mandate reducing GHG emissions. Given the long lifetime of infrastructure, the lengthy lead time necessary to implement changes, and the ever-shortening time available to effect meaningful climate action, it is imperative to initiate remedies as soon as feasible.

## Health

Most natural gas appliances vent their emissions outdoors. However, cook stoves and ovens do not, and their emissions are hard to detect: it is easy to be unaware of them and their hazards. Complementing ignorance, indoor air quality is rarely monitored or tested in private homes or businesses.

This naive complacency may not be justified. A study<sup>29</sup> by Lawrence Berkeley Laboratory (LBL) found that many residences with gas stoves (even those with range hoods) and ovens had air quality that exceeded EPA pollutant<sup>30</sup> maximums for outside air. LBL's lead researcher in the study, Dr. Brett Singer, concluded, "*Reducing people's exposure to pollutants from gas stoves should be a public health priority.*"

## Public Safety

Natural gas is flammable, explosive, invisible, and odorless<sup>31</sup>, yet it still must be distributed and stored via a network of pipelines and storage facilities<sup>32</sup>.

Utilities are entrusted with building and maintaining these hazardous facilities with oversight by the California Public Utilities Commission (CPUC). However, this oversight is may be lackadaisical, and enforcement and punishment for transgressions is often nominal.

For example, the 2010 San Bruno pipeline explosion caused an eight-alarm fire, killed eight residents, injured dozens more, damaged many houses beyond repair, and caused the evacuation of thousands. The crater from the explosion was 40 feet deep.

Subsequent investigation revealed that the pipeline owner, PG&E, was operating the pipeline above its own maximum rated operating pressure. The pipeline, installed in 1956, had numerous defective welds that were overlooked during safety inspections.

In 2012, an audit by the State of California found that PG&E illegally diverted over \$100 million from safety operations to executive compensations and bonuses<sup>33</sup>. The audit said that the utility gave "low priority" to pipeline safety.

27 <https://focus.senate.ca.gov/sb100>

28 The CEC and CPUC's Joint Agency Report is here: <https://www.energy.ca.gov/sb100>

29 <https://newscenter.lbl.gov/2013/07/23/kitchens-can-produce-hazardous-levels-of-indoor-pollutants/>

30 Indoor air pollutants resulting from gas stoves include nitrogen dioxide (NO<sub>2</sub>), formaldehyde, and carbon monoxide.

31 The natural-gas odor that most of us recognize is not from the methane itself, but from an odorant, typically methyl mercaptan, that is added to the gas with the intent to make it more detectable.

32 SDG&E released an interactive map of its map of its Transmission Lines (> 200 psi) and High Pressure (> 60 psi) Distribution Lines: <https://www.sdge.com/safety/gas-safety/pipeline-map>

33 <https://www.sfgate.com/bayarea/article/PG-E-diverted-safety-money-for-profit-bonuses-2500175.php>

The 2015 Aliso Canyon gas leak lasted four months. Its carbon emissions were equal to 25% of the entire South Coast Air Basin emissions in a year. Each day, the leak emitted the equivalent of six coal power plants, or 4.5 million cars<sup>34</sup>. Local residents had persistent headaches, nausea, and nosebleeds. More than 2800 families relocated for months. Two schools closed for the duration.

Investigations revealed that the rupture occurred due to corrosion of 61-year-old well casings. Safety valves that would have stopped the leak had been removed and not replaced because the well was not “critical”. There had been over 60 leaks in the preceding 30 years, but SoCalGas failed to conduct follow-up inspections or analyses.

For these safety failures and the resulting disaster, the CPUC fined SoCalGas \$4M, which is less than ½ day’s profit. Its executives received expungeable misdemeanor charges.

Of increasing concern, especially in California, is the occurrence of wildfires in urban areas. The danger of pumping natural gas at high pressure through fire-prone areas is obvious. Gas fires are difficult to extinguish by firefighters: its source must be turned off, which may not be easy.

The key points of this section are that natural gas facilities are precarious and dangerous, that utilities are entrusted with public safety but betray that trust, and that CPUC oversight fails to mitigate that betrayal.

## **Cost**

In spite of the multitude of environmental, legal, health, and public safety motivations for all-electric buildings, the first question asked is likely to be, “What’s it going to cost?”

The short answer is that both installation and operating costs are likely to be lower. Improved health and safety are harder to quantify, but are distinct and important.

Installing gas service in new buildings is expensive since new pipes must be laid. The Rocky Mountain Institute found that installation costs for gas service ranges from \$1000 to \$24,000 per home, with a median of \$8800<sup>35</sup>. These costs presumably do not include the cost of feeder lines under streets, or the distribution pipelines as shown in Footnote 32.

In comparison, increasing electrical service for an all-electric building adds only marginal costs.

Operation of natural gas appliances has always been thought as cheaper than electric ones. Decades ago, that notion may have been true.

But now, electrical appliances are much more efficient than gas appliances and require less energy. For example, electric water heaters using heat pump technology<sup>36</sup> require as little as 20% of the energy as gas heaters. Induction stoves directly heat cookware rather than relying on indirect methods such as thermal convection or conduction<sup>37</sup>. Consequently, they are far more efficient and provide rapid and precise heat control. Because there is no flame, they reduce chef burns and grease fires.

So even if each unit of energy may be higher for electricity than gas, the difference is ameliorated by lower energy use. Furthermore, rooftop solar<sup>38</sup> reduces electricity demand, whereas natural gas must always be purchased from outside sources.

---

34 <https://time.com/4180692/california-methane-gas-leak-environment>

35 See page 47 of

[https://rmi.org/wp-content/uploads/2018/06/RMI\\_Economics\\_of\\_Electrifying\\_Buildings\\_2018.pdf](https://rmi.org/wp-content/uploads/2018/06/RMI_Economics_of_Electrifying_Buildings_2018.pdf)

36 Encinitas CAP Strategies BE-2 and BE-4 mandate installation of “solar water heaters or other efficiency technology”. Presumably, heat-pump water heaters using clean electricity would qualify.

37 [https://en.wikipedia.org/wiki/Induction\\_cooking](https://en.wikipedia.org/wiki/Induction_cooking)

Current pending federal legislation includes HR763<sup>39</sup>, a national carbon fee and dividend program (CFD) which adds a fee to any fuel that results in carbon emissions<sup>40</sup>. While many of these proposed CFD programs will be revenue-neutral, owners can sidestep the issue and directly support the intent of these proposals: eliminate carbon emissions completely. All-electric buildings can achieve net-zero emissions, a goal impossible for buildings that use gas.

## Ordinance

Energy installations in buildings are governed by the CEC's Title 24<sup>41</sup>. Since the CEC was formed to reduce wasteful or inefficient consumption of energy, its mission is focused on efficiency rather than GHG reduction. In Title 24, there is only one mention of "greenhouse gas", and it is for the definition of Global Warming Potential (GWP). Otherwise the word "greenhouse" is not used for GHGs but for garden windows, and "GWP" is not used at all.

Title 24's indifference towards climate action is unfortunate because it regulates building codes throughout California<sup>42</sup>. And since they are state regulations, they preempt local regulations. So local efforts to reduce building GHG emissions must contend with state regulations that omit climate concerns.

For example, instituting a local ordinance mandating heat pump water heaters would require an amendment to Title 24<sup>43</sup>.

However, under the California Constitution, every city has the authority to prohibit installation of hazardous infrastructure when they grant use permits, and they can do so without conflicting with Title 24. Because natural gas is explosive and toxic, internal gas piping can be classified as hazardous and thus can be prohibited. These prohibitions do not conflict with the CPUC either, since that agency's regulatory authority is upstream from the gas meter.

The City of Berkeley<sup>44</sup> used this Constitutional provision when they passed their prohibition on gas installations in July 2019. The Berkeley ordinance explicitly states that it should not be construed as amending Title 24<sup>45</sup>.

---

38 The Encinitas CAP Strategies RE-2 and RE-3 as well as Title 24 require that new buildings install photovoltaic systems.

39 The Encinitas City Council passed a resolution in support of HR763 on March 20, 2019: [https://encinitas.granicus.com/MetaViewer.php?view\\_id=7&event\\_id=2034&meta\\_id=96864](https://encinitas.granicus.com/MetaViewer.php?view_id=7&event_id=2034&meta_id=96864)

40 <https://citizensclimatelobby.org/energy-innovation-and-carbon-dividend-act/>

41 The full name is **California Code of Regulations Title 24, Part 6**. Also known as the California Energy Commission's Building Energy Efficiency Standards for Residential and Nonresidential Buildings, it is available here: <https://ww2.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf>

42 It's possible that the CEC may eventually incorporate consideration of GHG emissions into Title 24. AB3232 requires the CEC to create a plan by 2021 that will reduce building sector emissions to 40% below 1990 levels by 2030. Given the severity of the climate crisis, it's tardy.

43 Such an amendment is a "reach" code. The City of Carlsbad used this approach in March 2019 when they passed an ordinance requiring non-gas water heaters in new residences. <https://www.carlsbadca.gov/services/depts/pw/environment/cap/waterheat.asp>

44 The City of Berkeley's Agenda documentation contains useful and relevant information and references and is available here under Action Calendar Item C: [https://www.cityofberkeley.info/Clerk/City\\_Council/2019/07\\_Jul/City\\_Council\\_07-16-2019\\_-\\_Regular\\_Meeting\\_Agenda.aspx](https://www.cityofberkeley.info/Clerk/City_Council/2019/07_Jul/City_Council_07-16-2019_-_Regular_Meeting_Agenda.aspx)

45 See 12.80.020 C in the Berkeley ordinance (attached).



In 2018, the University of California prohibited natural gas in new buildings, and any buildings renovated after June 2019 will not use gas<sup>46</sup>. The UC system comprises ten campuses and close to a half-million students, faculty, and staff.

### **Exemptions**

As with almost any ordinance, reasonable exemptions should be permissible. For example, homes that to add an Accessory Dwelling Unit (ADU) that is attached to an existing structure should be permitted to use the same energy supply. Other exemptions may be permissible too, but any such new structure should be required to install sufficient electrical service to allow full building electrification in the future.

### **CONCLUSION:**

Just as hitching posts, kerosene lamps, outhouses and iceboxes were once considered necessities for homes but were eventually outmoded and rendered obsolete, natural gas and its attendant appliances are similarly outmoded and obsolete. A plethora of environmental, legislative, health, public safety, and economic reasons militate their obsolescence.

Installation of obsolete technology in new buildings is irrational. Contemporary buildings do not install kerosene lanterns, outhouses or iceboxes, and they should not install natural gas fixtures either.

Because of the long lifetime of building infrastructure, allowing new installations of natural gas facilities essentially condemns those buildings to use natural gas for decades to come. Besides the myriad compelling reasons why that such a commitment would be regrettable for the building's occupants, aiding and abetting the use of natural gas is counterproductive to the City's climate action goals.

A shift to all-electric and gas-free buildings will leverage the advance achieved by the City's entry into Community Choice Energy and will reduce the City's GHG emissions in a manner not even anticipated in the Climate Action Plan.

---

46 See page 7 of [https://www.cityofberkeley.info/Clerk/City\\_Council/2019/07\\_Jul/Documents/2019-07-16\\_Presentations\\_Item\\_C\\_Pres\\_Harrison\\_pdf.aspx](https://www.cityofberkeley.info/Clerk/City_Council/2019/07_Jul/Documents/2019-07-16_Presentations_Item_C_Pres_Harrison_pdf.aspx)

ORDINANCE NO. 7,672–N.S.

ADDING A NEW CHAPTER 12.80 TO THE BERKELEY MUNICIPAL CODE  
PROHIBITING NATURAL GAS INFRASTRUCTURE IN NEW BUILDINGS  
EFFECTIVE JANUARY 1, 2020

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Chapter 12.80 of the Berkeley Municipal Code is added to read as follows:

**Chapter 12.80**

**PROHIBITION OF NATURAL GAS INFRASTRUCTURE IN NEW BUILDINGS**

**Sections:**

**12.80.010 Findings and Purpose.**

**12.80.020 Applicability.**

**12.80.030 Definitions.**

**12.80.040 Prohibited Natural Gas Infrastructure in Newly Constructed Buildings.**

**12.80.050 Public Interest Exemption.**

**12.80.060 Periodic Review of the Ordinance.**

**12.80.070 Severability.**

**12.80.080 Effective Date.**

**12.80.010 Findings and Purpose.**

In addition to the findings set forth in Resolution No. 67,736-N.S., the Council finds and expressly declares as follows:

- A. Scientific evidence has established that natural gas combustion, procurement and transportation produce significant greenhouse gas emissions that contribute to global warming and climate change.
- B. The following addition to the Berkeley Municipal Code is reasonably necessary because of local climatic, geologic and topographical conditions as listed below:
  - (1) As a coastal city located on the San Francisco Bay, Berkeley is vulnerable to sea level rise, and human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, which contribute to melting of glaciers and thermal expansion of ocean water—resulting in rising sea levels.
  - (2) Berkeley is already experiencing the repercussions of excessive greenhouse gas emissions as rising sea levels threaten the City's shoreline and infrastructure, have caused significant erosion, have increased impacts to infrastructure during extreme tides, and have caused the City to expend funds to modify the sewer system.
  - (3) Berkeley is situated along a wildland-urban interface and is extremely vulnerable to wildfires and firestorms, and human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, drought conditions, vegetative fuel, and length of fire seasons.
  - (4) Structures in Berkeley are located along or near the Hayward fault, which is likely to produce a large earthquake in the Bay Area.
- C. The following addition to the Berkeley Municipal Code is also reasonably necessary because of health and safety concerns as Berkeley residents suffer from asthma and other health conditions associated with poor indoor and outdoor air quality exacerbated by the combustion of natural gas.
- D. The people of Berkeley, as codified through Measure G (Resolution No. 63,518-N.S.), the City of Berkeley Climate Action Plan (Resolution No. 64,480-N.S.), and Berkeley Climate Emergency Declaration (Resolution No. 68,486-N.S.) all recognize that rapid, far-reaching and unprecedented changes in all aspects of society are required to limit global warming and the resulting environmental threat posed by climate change, including the prompt phasing out of natural gas as a fuel for heating and cooling infrastructure in new buildings.
- E. Substitute electric heating and cooling infrastructure in new buildings fueled by less greenhouse gas intensive electricity is linked to significantly lower greenhouse gas emissions and is cost competitive because of the cost savings associated with all-electric designs that avoid new gas infrastructure.
- F. All-electric building design benefits the health, welfare, and resiliency of Berkeley and its residents.
- G. The most cost-effective time to integrate electrical infrastructure is in the design phase of a building project because building systems and spaces can be designed to optimize the performance of electrical systems and the project can take full advantage of avoided costs and space requirements from the elimination of natural gas piping and venting for combustion air safety.

- H. It is the intent of the council to eliminate obsolete natural gas infrastructure and associated greenhouse gas emissions in new buildings where all-electric infrastructure can be most practicably integrated, thereby reducing the environmental and health hazards produced by the consumption and transportation of natural gas.

**12.80.020 Applicability.**

- A. The requirements of this Chapter shall apply to Use Permit or Zoning Certificate applications submitted on or after the effective date of this Chapter for all Newly Constructed Buildings proposed to be located in whole or in part within the City.
- B. The requirements of this Chapter shall not apply to the use of portable propane appliances for outdoor cooking and heating.
- C. This chapter shall in no way be construed as amending California Energy Code requirements under California Code of Regulations, Title 24, Part 6, nor as requiring the use or installation of any specific appliance or system as a condition of approval.
- D. The requirements of this Chapter shall be incorporated into conditions of approval for Use Permits or Zoning Certificates under BMC Chapter 23.B.

**12.80.030 Definitions.**

- A. "Applicant" shall mean an applicant for a Use Permit or Zoning Certification under Chapter 23B,
- B. "Energy Code" shall mean the California Energy Code as amended and adopted in BMC Chapter 19.36.
- C. "Greenhouse Gas Emissions" mean gases that trap heat in the atmosphere.
- D. "Natural Gas" shall have the same meaning as "Fuel Gas" as defined in California Plumbing Code and Mechanical Code.
- E. "Natural Gas Infrastructure" shall be defined as fuel gas piping, other than service pipe, in or in connection with a building, structure or within the property lines of premises, extending from the point of delivery at the gas meter as specified in the California Mechanical Code and Plumbing Code.
- F. "Newly Constructed Building" shall be defined as a building that has never before been used or occupied for any purpose.
- G. "Use Permit" shall have the same meaning as specified in Chapter 23B.32.
- H. "Zoning Certificate" shall have the same meaning as specified in Chapter 23B.20.

**12.80.040 Prohibited Natural Gas Infrastructure in Newly Constructed Buildings.**

- A. Natural Gas Infrastructure shall be prohibited in Newly Constructed Buildings.
  - 1. Exception: Natural Gas Infrastructure may be permitted in a Newly Constructed Building if the Applicant establishes that it is not physically feasible to construct the building without Natural Gas Infrastructure. For purposes of this exception, "physically feasible" to construct the building means either an all-electric prescriptive compliance approach is available for the building under the Energy Code or the building is able to achieve the performance compliance standards under the Energy Code using commercially available technology and an approved calculation method.

- B. To the extent that Natural Gas Infrastructure is permitted, it shall be permitted to extend to any system, device, or appliance within a building for which an equivalent all-electric system or design is not available.
- C. Newly Constructed Buildings shall nonetheless be required at a minimum to have sufficient electric capacity, wiring and conduit to facilitate future full building electrification.
- D. The requirements of this section shall be deemed objective planning standards under Government Code section 65913.4 and objective development standards under Government Code section 65589.5.

**12.80.050 Public Interest Exemption.**

- A. Notwithstanding the requirements of this Chapter and the Greenhouse Gas Emissions and other public health and safety hazards associated with Natural Gas Infrastructure, minimally necessary and specifically tailored Natural Gas Infrastructure may be allowed in a Newly Constructed Building provided that the entitling body establishes that the use serves the public interest. In determining whether the construction of Natural Gas Infrastructure is in the public interest, the City may consider:
  - 1. The availability of alternative technologies or systems that do not use natural gas;
  - 2. Any other impacts that the decision to allow Natural Gas Infrastructure may have on the health, safety, or welfare of the public.
- B. If the installation of Natural Gas Infrastructure is granted under a public interest exemption, the Newly Constructed Buildings shall nonetheless be required at the minimum to have sufficient electric capacity, wiring and conduit to facilitate future full building electrification.

**12.80.060 Periodic Review of Ordinance.**

The City shall review the requirements of this ordinance every 18 months for consistency with the California Energy Code and the Energy Commission's mid-cycle amendments and triennial code adoption cycle as applicable.

**12.80.070 Severability.**

If any word, phrase, sentence, part, section, subsection, or other portion of this Chapter, or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the prescribed application thereof, shall be severable, and the remaining provisions of this Chapter, and all applications thereof, not having been declared void, unconstitutional or invalid, shall remain in full force and effect. The City Council hereby declares that it would have passed this title, and each section, subsection, sentence, clause and phrase of this Chapter, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases is declared invalid or unconstitutional.

**12.80.080 Effective Date.**

The provisions of this chapter shall become effective on January 1, 2020.



Section 2. This Ordinance shall be submitted to the California Building Standards Commission following adoption as consistent with state law.

Section 3. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

At a regular meeting of the Council of the City of Berkeley held on July 16, 2019, this Ordinance was passed to print and ordered published by posting by the following vote:

Ayes:           Bartlett, Davila, Droste, Hahn, Harrison, Kesarwani, Robinson, Wengraf,  
  
                    and Arreguin.

Noes:           None.

Absent:         None.